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EXAMINER
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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*Ex parte* DIRK QUINTENS,  
HORST FRIEDEL,  
HUUB VAN AERT, and  
JAN GILLEIR

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Appeal 2009-000500  
Application 09/782,835  
Technology Center 1700

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Decided:<sup>1</sup> July 28, 2009

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Before BEVERLY A. FRANKLIN, MICHAEL P. COLAIANNI, and  
JEFFREY B. ROBERTSON, *Administrative Patent Judges*.

COLAIANNI, *Administrative Patent Judge*.

DECISION ON APPEAL

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<sup>1</sup> The two-month time period for filing an appeal or commencing a civil action, as recited in 37 C.F.R. § 1.304, begins to run from the Decided Date shown on this page of the decision. The time period does not run from the Mail Date (paper delivery) or Notification Date (electronic delivery).

This is a decision on an appeal under 35 U.S.C. § 134 from the Examiner's final rejection of claims 1, 4 through 8, 10 through 18, and 20 through 24, all of the claims pending in the above-identified application.<sup>2</sup> We have jurisdiction pursuant to 35 U.S.C. § 6.

We AFFIRM.

### STATEMENT OF THE CASE

The subject matter on appeal is directed to an ink jet recording element.

Claim 1 is illustrative:

1. An ink jet recording element comprising a support selected from a group consisting of PET, wet strength paper, PVC, PVC with an adhesive backing, polypropylene, polycarbonate a subbed polymeric support, a canvas support, polypropylene-coated paper, polyethylene-coated paper and polyethylene paper and an ink receiving layer wherein said ink receiving layer comprises (a) a pigment consisting essentially of a porous inorganic silica, (b) a binder or binder mixture with silanol modified polyvinyl alcohol as a principal binder, and (c) a film-forming polymer having a glass transition temperature  $T_g$  lower than 50°C.

As evidence of unpatentability of the claimed subject matter, the Examiner relies upon the following references:

Kawano	US 5,478,631	Dec. 26, 1995
Santo	US 5,965,252	Oct. 12, 1999
Nordeen	US 6,022,440	Feb. 8, 2000
Mukoyoshi	US 6,187,430 B1	Feb. 13, 2001
Mochizuki	US 6,238,784 B1	May 29, 2001
Shaw-Klein	US 6,277,476 B1	Aug. 21, 2001

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<sup>2</sup> Claims 1, 4, and 10 were amended by Appellants and the amendments were entered by the Examiner subsequent to the final rejection. (See Amendment dated July 24, 2007, entered on August 3, 2007).

Appellants appeal the following rejections of the Examiner<sup>3</sup>:

- 1) Claims 1, 6-8, 10, 16, and 20-24 under 35 U.S.C. § 103(a) as unpatentable over the combined disclosures of Kawano and Santo; and
- 2) Claims 1, 4-8, 10, 16-18, and 20-24 under 35 U.S.C. § 103(a) as unpatentable over the combined disclosures of Kawano and Shaw-Klein<sup>4</sup>;
- 3) Claims 11-15 under 35 U.S.C. § 103(a) as unpatentable over the combined disclosures of Kawano and Shaw-Klein and further in view of the disclosures of Mochizuki and Nordeen;
- 4) Claims 11-15 under 35 U.S.C. § 103(a) as unpatentable over the combined disclosures of Kawano, Santo, and Mochizuki and further in view of the disclosure of Nordeen; and
- 5) Claims 10 and 23 under 35 U.S.C. § 103(a) as unpatentable over the disclosure of Kawano in view of the disclosure of Santo, and alternatively in view of the disclosure of Shaw-Klein and further in view of the disclosure of Mukoyoshi.

*REJECTIONS (1), (4), and (5): The §103 rejections based on Kawano and Santo*

With respect to rejection (1), Appellants argue the claims as a group. (Br. 5-9). Accordingly, we address Appellants' arguments regarding the rejection with respect to claim 1 only. *See* 37 C.F.R. § 41.37(c)(1)(vii) (2009).

With respect to rejection (4) and the portion of rejection (5) based on Kawano and Santo, Appellants argue the claims in each rejection as a group. (Br.

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<sup>3</sup> Appellants' listing of Smith-Klein as a reference in rejections (2), (3), and (5) is harmless error since it is apparent that the Examiner relies on Shaw-Klein in these rejections. (*Compare* Br. 4-5 with Ans. 4-11).

<sup>4</sup> Appellants' inadvertent omission of claim 10 in the statement of rejection (2) is harmless error. (*Compare* Br. 4 with Ans. 6).

10-13). Accordingly, we address Appellants' arguments regarding each rejection with respect to claims 11 and 10, respectively. *See* 37 C.F.R. § 41.37(c)(1)(vii) (2009).

With respect to rejection (1), Appellants argue that

[T]he Examiner has failed to consider the teaching of Santo which are related to the silica. . . . Santo states that if one used more than 50%, by weight, untreated pigment the effect according to the invention described therein would not be expected.

. . . .

[Therefore,] if one of skill in the art utilized the silanol modified PVA without reducing the amount of silica to less than 50% by weight they would not expect to realize the advantages offered by the teachings of Santo and therefore they would have no incentive to make such a substitution.

(Br. 6). Thus, Appellants argue that Santo teaches away from the claimed invention. Appellants also argue that the Examiner relies upon impermissible hindsight. (Br. 6-7).

## ISSUE

Have Appellants shown reversible error in the Examiner's determination that it would have been obvious to combine Kawano and Santo to arrive at the claimed invention within the meaning of § 103? We decide this issue in the negative.

## FINDINGS OF FACT (FF)

1. Appellants do not specifically dispute the Examiner's factual findings regarding Kawano and Santo. (*Compare* Ans. 4-6 *with* Br. 5-7). Nor do Appellants specifically dispute the Examiner's reason for combining Kawano and Santo. *Id.*

2. Santo teaches a printing medium, which "can prevent the occurrence of beading and provide images high in optical density, bright in color tone and high in resolution, and has excellent ink-absorbing capacity," may be composed of an alumina hydrate surface-treated with a coupling agent and a binder on a substrate. (Santo, col. 1, ll. 5-11 and col. 3, ll. 25-44). Santo states that

[b]esides the alumina hydrate surface-treated with the coupling agent . . . untreated pigments may also be used so far as the amount to be used is 50% by weight or less of the total weight of the pigments used. If the amount is more than 50% by weight, the effect according to the present invention can not [sic] be expected.

(Santo, col. 8, ll. 61-65). However, nowhere does Santo discourage using a silanol modified polyvinyl alcohol binder for the purpose of "ecology." To the contrary, Santo states that the silanol modified polyvinyl alcohol may be used as a binder for the purpose of "ecology." (Santo, col. 10, ll. 5-10).

### PRINCIPLES OF LAW

"A reference may be said to teach away when a person of ordinary skill, upon reading the reference, would be discouraged from following the path set out in the reference, or would be led in a direction divergent from the path that was taken by the applicant." *In re Gurley*, 27 F.3d 551, 553 (Fed. Cir. 1994).

"Any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning . . ." *In re McLaughlin*, 443 F.2d 1392, 1395 (CCPA 1971). Reconstruction is proper if it relies upon knowledge within the level of ordinary skill at the time of the invention and not upon knowledge gained solely from Appellants' disclosure. *Id.*

## ANALYSES AND CONCLUSIONS

Appellants argue that Santo teaches away from the claimed invention. (Br. 6). We disagree. While it is true that Santo states that

[b]esides the alumina hydrate surface-treated with the coupling agent . . . untreated pigments may also be used so far as the amount to be used is 50% by weight or less of the total weight of the pigments used. If the amount is more than 50% by weight, the effect according to the present invention can not [sic] be expected[.]

nowhere does Santo discourage using a silanol modified polyvinyl alcohol binder for "ecology" purposes. (FF 2). To the contrary, Santo states that the silanol modified polyvinyl alcohol may be used as a binder for "ecology" purposes. (FF 2). Thus, Santo's teaching that a printing medium composed of an alumina hydrate surface-treated with a coupling agent and an amount of more than 50% by weight of untreated pigments cannot be expected to have properties such as beading, brightness, resolution, and ink-absorption does not teach away from employing Santo's modified polyvinyl alcohol binder in Kawano's ink jet media for "ecology" purposes.

Moreover, Appellants' teaching away argument attacks the teachings of the references individually rather than addressing what the teachings of the references as a whole would have suggested to one of ordinary skill in the art. Specifically, the combined teachings of Kawano and Santo would have suggested that silanol modified PVA may be used with untreated silica pigment. However, if concentrations greater than 50% are desired, the silica must be treated with a coupling agent per Santo's teachings. Nothing in Kawano or Santo discourages one of ordinary skill from treating the silica pigment with a coupling agent if an

amount greater than 50% of pigment is desired for use with the silanol modified PVA. *Gurley*, 27 F.3d at 553.

In addition, since only knowledge of those skilled in the art at the time of the invention is relied upon as a reason for making the modification to Kawano, we determine that this combination does not rely on impermissible hindsight.

Therefore, because a prima facie case of obviousness has been established, we determine that the burden properly shifted to Appellants to present persuasive arguments or evidence refuting the prima facie case. However, on this record, Appellants have not done so.

Thus, it follows that Appellants have not shown reversible error in the Examiner's determination that it would have been obvious to combine Kawano and Santo to arrive at the claimed invention within the meaning of § 103.

Accordingly, based on the Factual Findings and legal conclusions set forth in the Answer and above, we affirm the Examiner's rejection of claims 1, 6-8, 10, 16, and 20-24 under 35 U.S.C. § 103(a) over the combined disclosures of Kawano and Santo.

With respect to rejection (4) and the portion of rejection (5) based on Kawano and Santo, Appellants do not specifically argue any feature unique to either dependent claim 10 or 11, which ultimately depends from independent claim 1, but instead rely on the arguments they presented for rejection (1). (Br. 10-13). We, therefore, sustain the rejections of claims 10-15 and 23 for the reasons given above.



*REJECTIONS (2), (3), and (5): The § 103 rejections based on Kawano and Shaw-Klein*

With respect to rejection (2), Appellants argue the claims as a group. (Br. 7-9). Accordingly, we address Appellants' arguments regarding the rejection with respect to claim 1 only. *See* 37 C.F.R. § 41.37(c)(1)(vii)(2009).

With respect to rejection (3) and the portion of rejection (5) based on Kawano and Shaw-Klein, Appellants argue the claims in each rejection as a group. (Br. 9-10 and 12-13). Accordingly, we address Appellants' arguments regarding each rejection with respect to claims 11 and 10, respectively. *See* 37 C.F.R. § 41.37(c)(1)(vii)(2008).

The Examiner determines that it would have been obvious to employ Shaw-Klein's silanol modified PVA and vinyltrimethoxysilane in Kawano's ink jet media. (Ans. 6-8). Appellants argue that the combination is improper because "[Shaw-Klein's] coupling agent would necessarily cause a premature coupling reaction irrespective of the presence of the ink. . . . [, which would] destroy the utility of the media. (Br. 8). Appellants also argue that the Examiner relies upon impermissible hindsight. (Br. 8). In addition, Appellants argue that "[t]he purpose of the silica and silanol modified PVA is to react such that a bond is formed. Why would one of skill in the art want to react the ingredients prematurely?" (Br. 8-9).

#### ISSUE

Have Appellants shown reversible error in the Examiner's determination that it would have been obvious to combine Kawano and Shaw-Klein to arrive at the claimed invention with the meaning of § 103(a)? We decide this issue in the negative.

### ADDITIONAL FINDINGS OF FACT (FF)

3. Appellants do not specifically dispute the Examiner's finding that Kawano teaches an ink jet recording element having all of the features recited in claim 1, except for the silanol modified polyvinyl alcohol. (*Compare* Ans. 6-8 *with* Br. 7-9). In this regard, Kawano teaches an ink jet recording sheet having "excellent water resistance of printed images." (Kawano, col. 1, ll. 5-9), The ink jet recording sheet comprises, *inter alia*, an ink receptive layer being an aqueous composition, which is composed of a pigment such as silica and a binder, which may include a modified polyvinyl alcohol. (Kawano, col. 2, ll. 20-26, col. 4, ll. 50-59, and col. 5, l. 43 to col. 6, l. 36). Kawano also teaches that its ink receptive layer "may contain . . . auxiliary agents for example . . . [a] water-resisting agent." (Kawano, col. 8, ll. 52-60). Kawano, however, does not mention a silanol-modified polyvinyl alcohol.
4. Shaw-Klein teaches an ink jet ink/receiver set having a reactive coupling agent in an ink receiving layer for "enhanc[ing] the water resistance . . . of images printed using inks." (Shaw-Klein, col. 3, ll. 14-16 and col. 2, ll. 40-57). In one embodiment, Shaw-Klein teaches the reactive coupling agent's (e.g., vinyltrimethoxysilane) hydrolysable group reacts with a mineral surface (e.g., silica particles) and the reactive coupling agent's organofunctional group reacts with an organic resin (e.g., silanol modified polyvinyl alcohol). (Shaw-Klein, col. 3, ll. 14-51 and col. 2, ll. 42-49).

### PRINCIPLE OF LAW

Appellant bears the procedural burden of showing harmful error in the Examiner's rejections. *See, e.g., In re Kahn*, 441 F.3d 977, 985-86 (Fed. Cir. 2006) ("On appeal to the Board, an applicant can overcome a rejection [under § 103] by showing insufficient evidence of *prima facie* obviousness") (citation and internal quote omitted).

### ANALYSES AND CONCLUSIONS

With respect to rejection (2), like the Examiner, we determine that it would have been obvious to one of ordinary skill in the art to employ Shaw-Klein's vinyltrimethoxysilane and silanol modified polyvinyl alcohol in Kawano's ink receptive layer, which is composed of, *inter alia*, silica. (FF 3 and 4). In this regard, one of ordinary skill making such a combination would have had a reasonable expectation of successfully improving the water resistance of the inkjet printed image. *Id.* In addition, since only knowledge of those skilled in the art at the time of the invention is relied upon as a reason for making the modification to Kawano, we determine that this combination does not rely on impermissible hindsight.

Appellants argue that the combination is improper because "[Shaw-Klein's] coupling agent would . . . destroy the utility of . . . [Kawano's] media." (Br. 8). Thus, Appellants argue that adding Shaw-Klein's vinyltrimethoxysilane and silanol modified polyvinyl alcohol in Kawano's ink receptive layer would render Kawano's media unsatisfactory for its intended purpose. We disagree.

Kawano plainly teaches the desirability of an ink jet recording sheet having excellent water resistance. Also, Kawano teaches that its ink receptive layer "may contain . . . auxiliary agents for example . . . [a] water-resisting agent." (FF 3). Thus, contrary to Appellants' assertion, employing Shaw-Klein's vinyltrimethoxysilane and silanol modified polyvinyl alcohol in Kawano's ink receptive layer for improving the water resistance of the inkjet printed image does not render Kawano's ink jet recording sheet unsatisfactory for its intended purpose (i.e., an ink jet recording sheet having "excellent water resistance of printed images."). Moreover, Appellants have not shown that the coupled silica in the ink receiving layer suggested by Kawano and Shaw-Klein would render Kawano's ink jet recording sheet unsatisfactory for its intended purpose.

Thus, it follows that Appellants have not shown reversible error in the Examiner's determination that it would have been obvious to combine Kawano and Shaw-Klein to arrive at the claimed invention within the meaning of § 103.

Accordingly, based on the Factual Findings and legal conclusions set forth in the Answer and above, we affirm the Examiner's rejection of claims 1, 4-8, 10, 16-18, and 20-24 under 35 U.S.C. § 103(a) over the combined disclosures of Kawano and Shaw-Klein.

With respect to rejection (3) and the portion of rejection (5) based on Kawano and Shaw-Klein, Appellants do not specifically argue any feature unique to either dependent claim 11 or 10, respectively, which depends from independent claim 1, but instead rely on the arguments they presented for rejection (1). (Br. 10-13). We, therefore, sustain the rejections of claims 10-15 and 23 for the reasons given above.

ORDER

In summary, we sustain all of the rejections made by the Examiner.

Accordingly, the decision of the Examiner is affirmed.

TIME PERIOD

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1)(iv)(2009).

AFFIRMED

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